

## GENERAL DISCUSSION

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**Alan Beattie**  
**Sandia Laboratory**  
**Albuquerque, N. M.**

Discussed the processing of acoustic emission signals which would permit a convenient method for energy analysis. With the scheme, the sorting of signals into energy bands was possible.

**T. E. Long**  
**Montana State University**  
**Missoula, Montana**

Reported on some preliminary investigations of acoustic emissions from snow. A method for detecting impending avalanches is being sought.

**Marc Hoff**  
**Grumman Aircraft Corp.**  
**Bethpage, N. Y.**

Described an experiment in which computer assisted triangulation techniques were used to follow crack propagation in a scored flat diaphragm.

# Acoustic Emission Working Group

## Subcommittee Report:

## Recommended Acoustic Terminology

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At the 8th meeting of the Acoustic Emission Working Group (AEWG) on 9 December 1971 in Bal Harbour, Florida, the Terminology Subcommittee presented its first report on a recommended acoustic emission terminology. The members of the AEWG Terminology Subcommittee are:

T. T. Anderson – Chairman

R. B. Engle

J. R. Frederick

D. R. Hay

E. L. McCabe

G. A. Spiering

Argonne National Laboratory

Lawrence Livermore Laboratory

University of Michigan

Drexel University

The Boeing Company

Teledyne Material Research

The AEWG passed a motion stating that an amended version of this first report be presented to the ASTM for inclusion in its Special Technical Publication (STP 505) on Acoustic Emission. While many of the terms listed are still under discussion it was the AEWG's belief that it would be better to make this report widely available at this time in order to assist in the early adoption of standard terms throughout the technical community. The papers published in the STP for example were in no way standardized to the recommended terms in this report.

The AEWG in the past five years has greatly increased the ease of communicating results of acoustic emission programs. We believe that publication of this first report on a recommended acoustic emission terminology will substantially aid our efforts.

**Respectfully submitted,**

**Allen Green**

*Dunegan Research Corporation*

*Chairman*

**T. T. Anderson**

*Argonne National Laboratory*

*Chairman, Terminology Subcommittee*

## Acoustic Emission Terminology

### *Acoustic Emission*

Acoustic emission is a transient elastic wave generated by the rapid release of energy within a material.

*Discussion* – Acoustic emission is the recommended term for general use. Alternate terms in the literature include (1) stress wave emission, (2) microseism, and (3) prefix modifiers of emission or of acoustic emission.

### *Emission Event*

An emission event is a rapid physical change in a material, that releases energy appearing as acoustic emission.

### *Emission Signal*

An emission signal is an observed signal obtained by detection of acoustic emission.

### *Burst Emission*

Burst emission is the qualitative description of emission signals, related to individual emission events within the material.

*Discussion* – Use of burst emission is recommended only for describing qualitative appearance of emission signals. Ambiguity of the term has occasioned recommendations that its use be limited.

### *Continuous Emission*

Continuous emission is the qualitative description of an apparent sustained signal level from rapidly occurring acoustic emission events.

*Discussion* – Use of continuous emission is recommended only for describing qualitative appearance of emission signals. Ambiguity of the term has occasioned recommendations that its use be limited.

### *Emission Count*

Emission count is a weighted measure of acoustic emission events which have occurred in a given time period. The method of measurement and the weighting procedure should be described.

*Discussion* – The weighting procedure affects the value and parameter dependency of emission count. A typical method of weighting is to count the number of times the emission signal exceeds a predetermined signal-amplitude threshold. By this method a single event may be counted several times, and large signals are weighted more heavily than small signals. Other methods include dead time gating to eliminate counts from ring down, measuring the time the signal is

above the threshold level, and counting the emission signal weighted by its peak amplitude.

#### *Kaiser Effect*

The Kaiser effect is the immediately irreversible characteristic of acoustic emission phenomenon resulting from an applied stress. If the effect is present there is little or no acoustic emission until previously applied stress levels are exceeded.

#### *Signature*

A signature is a set of identifiable characteristics of acoustic emission signals attributable to a particular type of source.